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Logsdon

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[54] **SCUPPER DRAIN STRUCTURE**

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[52] **U.S. Cl.** **210/163**

[51] **Int. Cl.** **E03t 5/06**

[58] **Field of Search** 210/163–166, 210/169

[56] **References Cited**

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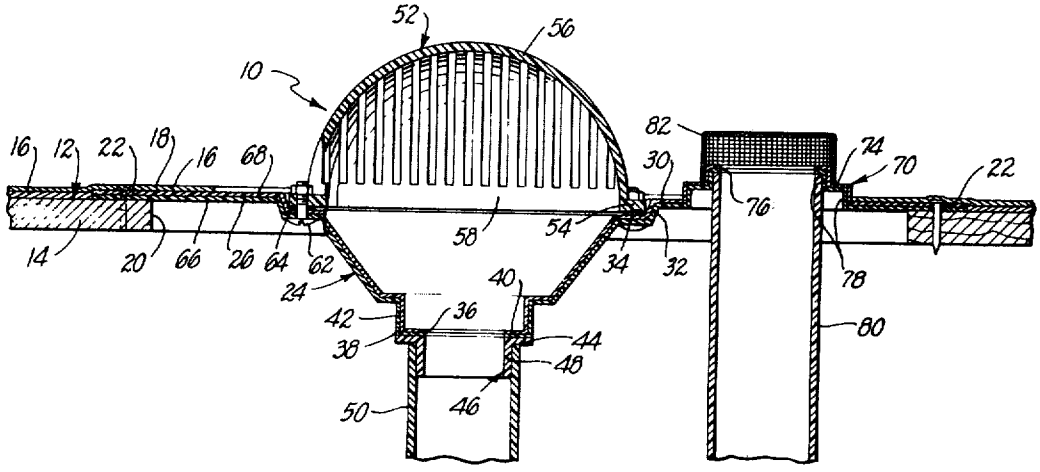
[57] **ABSTRACT**

A scupper drain structure which is primarily intended for use with flat or comparatively flat roofs can be constructed utilizing a laminated body consisting of a self supporting layer of an ABS polymer material thermally bonded to an acrylic surface layer which is resistant to degradation. Such a body includes a peripheral section adapted to rest on a roof around a hole in the roof and an integral central section having a generally funnel like shape. A groove is located in the central section for retaining a mounting flange on a screen or grate covering the central section. The bottom of the central section is preferably constructed so that it can be attached to pipes of different sizes. The peripheral section may also include an overflow consisting of an upstanding hollow boss which is preferably formed so that either of several different sizes of pipe may be secured to it.

1 Claim, 2 Drawing Figures



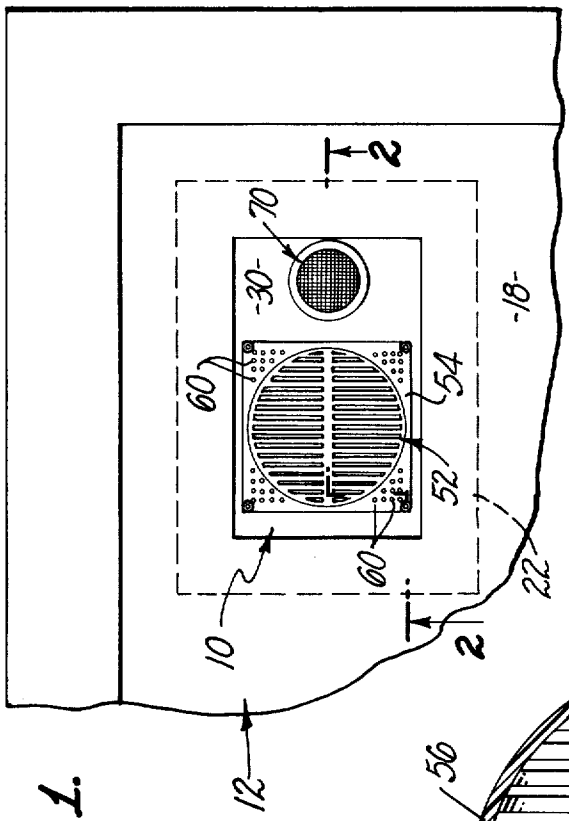

2
70
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FIG. 1.

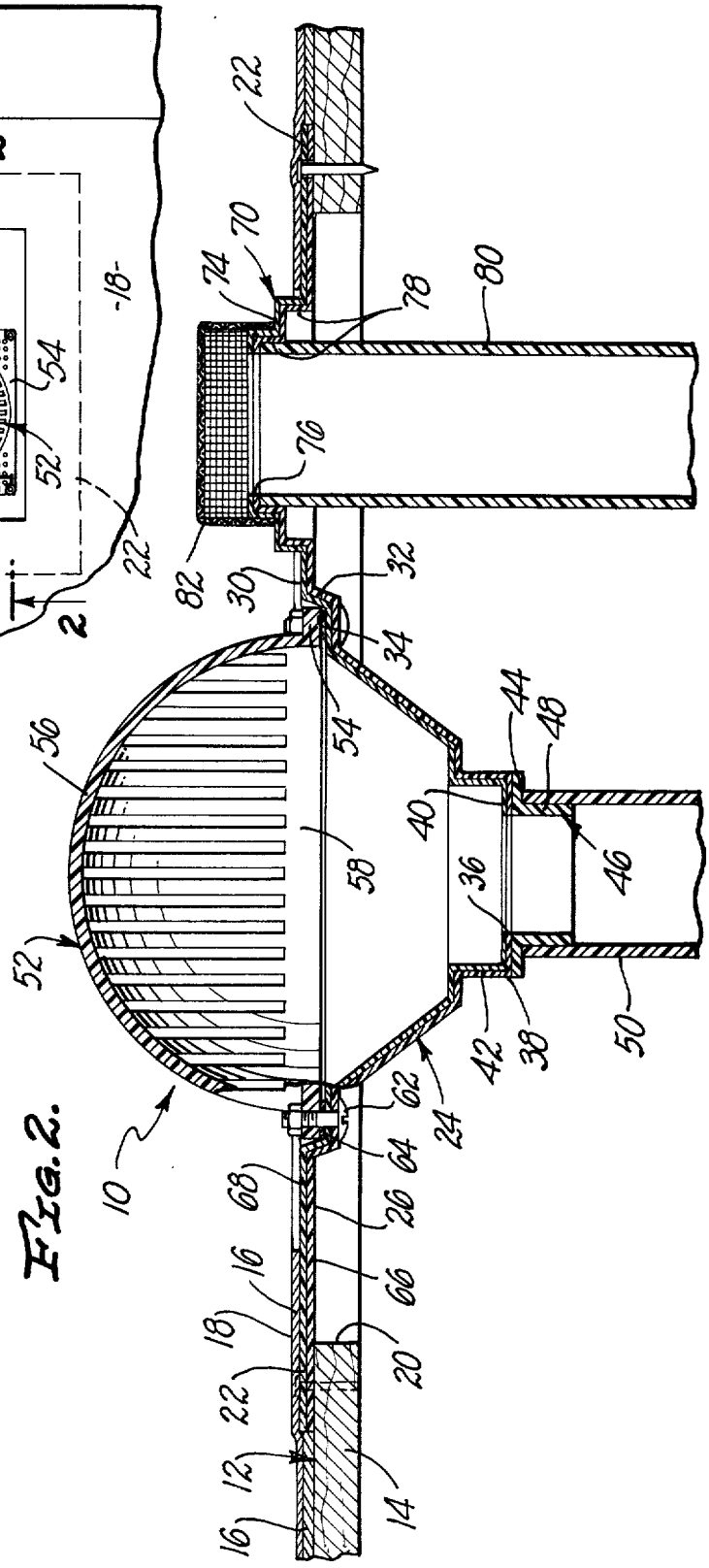
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FIG. 2.

SCUPPER DRAIN STRUCTURE

BACKGROUND OF THE INVENTION

The invention set forth in this specification pertains to the field of scupper drains or scupper drain structures. Perhaps the earliest scupper drains or drain structures were used in connection with draining the decks of various types of boats. At the present time, however, it is considered that the vast majority of scupper drain structures are used in connection with various types of building roofs.

The scupper drains or drain structures of this invention are primarily intended for use with flat or nearly flat roofs of this category which are built up by applying to a supporting roof structure of wood, concrete or the like successive layers of so-called "felt" or "paper" and tar. Scupper drain structures for use with roofs of this type have in the past normally been manufactured of metal. They have occasionally been manufactured of cast iron. More often, however, it is believed that they have been manufactured more commonly of so-called "sheet metal" consisting of a comparatively thin sheet of iron or steel. Usually such sheets have been provided with a protective coating of one sort or another, such as a galvanized coating.

In a sense from a utilitarian standpoint such structures can be considered satisfactory. This can be shown by the fact that they have been widely used for many years. However, such prior scupper drain structures are considered to also be unsatisfactory for any one of a variety of reasons. Prior cast drain structures are comparatively heavy and expensive because of their weight. It is frequently uneconomical to ship them a significant distance. Further, in some applications it is necessary to especially construct roofs to support them. Sheet metal type scupper structures are considered comparatively disadvantageous because of the amount of labor that goes into their manufacture and because of the fact that they are not always manufactured to desired quality standards. Further such sheet metal structures are apt to be bent or damaged as they are manufactured, shipped and installed.

Frequently there is also a problem with both of these types of metal scuppers in obtaining what may be regarded as satisfactory adhesion between the tar on a roof and the metal to enable the scupper drains to be satisfactorily used over a prolonged period without leakage. In some locales it is also considered that the corrosive resistance qualities of prior metal scupper drain structures are so low that it is disadvantageous to use such structures.

SUMMARY OF THE INVENTION

From the preceding it is believed that it will be apparent that there is a need for new and improved scupper drains and scupper drain structures. A broad objective of the invention set forth in this specification is to fullfil this need. More specific objectives of the invention are to provide scupper drains or drain scuppers of materials: which can be easily and conveniently manufactured to a desired quality standard at a comparatively nominal cost; which are sufficiently light in weight that they can be shipped at a comparatively nominal freight cost; which are physically of such a character that they can be handled, shipped and used without their becoming damaged; which will form an adequate satisfactory bond with normal roofing tar and the like; and which

are capable of giving prolonged, reliable, effective service.

In accordance with this invention, these objectives are achieved by providing a scupper drain structure which comprises: a body of laminated material consisting of an imporous, continous, lower self supporting layer of ABS polymer material and an imporous, continous, upper surface layer of an acrylic polymer which is resistant to degradation thermally bonded to the lower layer. Such a body includes a peripheral section which is nearly flat and which slopes downward peripherally towards a central section of a funnel like shape. The central section extends beneath the peripheral section and its bottom is adapted to be connected to a drain pipe by fitting means located on the bottom for this purpose. A self-supporting grate is located by a mounting flange on the grate fitting into a groove in the central section adjacent to the top of this section.

BRIEF DESCRIPTION OF THE DRAWING

A summary of this category is not intended to indicate all the facets and features of an invention such as the present invention which are significant or important. Such other items of importance or significance with respect to the present invention will be apparent from a detailed consideration of the remainder of this specification, the appended claims and the accompanying drawing in which:

FIG. 1 is a top plan view of a part of the flat roof constructed utilizing a presently preferred embodiment or form of a scupper drain structure in accordance with this invention, and

FIG. 2 is a cross-sectional view taken at line 2—2 of FIG. 1.

The particular scupper drain structure illustrated utilizes certain verablly expressed concepts as are set forth in the claim in the appended claims. Because of the nature of these concepts they may be utilized within a number of differently appearing structures through the use or exercise of normal, routine skill in the plumbing industry.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

In the drawing there are shown a scupper drain structure **10** of the present invention utilized in connection with a nearly flat roof **12** which gradually drains towards the structure **10.** The roof **12** normally includes a conventional roof structure **14** which is surmounted by layers of so-called felt or paper **16** and tar **18.** This felt or paper **16** is not normally either felt or paper in a technical sense but may consist of fibers of various types bonded together in various manners and normally impregnated with an asphalt or tar preparation. Equivalents can of course be substituted for the paper **16** and the tar **18.**

The roof structure **14** is provided with an opening **20** which is adapted to be enclosed by the structure **10.** This structure **10** has a generally peripheral section **22** which is larger than the opening **20** so as to be capable of overlying the roof structure **14** around it. This peripheral section **22** carries an integral central section **24** which extends from the bottom **26** of the section **22** through the opening **20.** The entire structure **10** is adapted to be secured in place by nails or other fasteners being inserted from the top of the peripheral section **22** into the roof structure **14.**

The central section **24** is of a generally funnel like shape and has a top **32** secured to the peripheral section **22** along a peripheral, internal groove **34** extending completely around the interior of the central section **24** immediately below the adjacent, surrounding surface of the top **30** of the peripheral section **22.** This central section **24** leads to a bottom discharge opening **36** at the bottom **38** of the section **24.** Preferably this opening **36** is defined by an inwardly extending flange **40** at the bottom **38** of the central section **24.** In the embodiment or structure **10** shown this flange **40** is immediately below a comparatively short cylindrical extension **42** generally at the bottom **38.** The flange **40** is adapted to be secured by welding or related techniques to a mating flat flange **44** on a rigid fitting **46.** This fitting **46** includes a downwardly extending cylindrical nipple **48** carried by the flange **44.**

This structure consisting of the extension **42** and the nipple **48** constitutes as what may be referred to as a "fitting means" for securing the bottom of the central section **24** to a pipe **50.** Preferably the extension **42** and the nipple **48** are dimensioned so that their outer diamters correspond to the inner diameters of standard size pipe so that a pipe may be secured to either in accordance to code requirements in a particular locale governing pipe sizes. If desired such a fitting means may include more than two cylindrical parts of different diameters so that so that the structure may be used with pipes of more than two sizes.

The structure **10** also includes a self supporting screen or grate **52** having a peripheral mounting flange **54** adapted to fit within the groove **34** completely around the interior of the central section **24.** This flange **54** is preferably no thicker than the depth of the groove **34** beneath the top **30** of the peripheral section **22** adjacent to it so that water will readily drain onto it. This flange **54** carries a central, dome shaped, foraminous screen or grid structure **66** through which water can drain during the use of the structure **10.** Preferably the grid structure **56** is separated by an impervious guard wall or band **58** from the flange **54.** This band **58** serves to block gravel and similar roof debris from the grid structure **56** so as to keep such debris from falling into the central section **24** and the pipe **50.** The flange **54** preferably contains small drain holes **60** adjacent to the guard wall **58** which serve more or less as a filter hole in keeping back debris. These holes **60** are located so as to be spaced from the groove **34** in the structure shown.

If the screen or grid **52** is manufactured of a conventional cast iron composition normally it will be heavy enough so that no fastening means are required in order to secure it into place. When, however, it is constructed as preferred out of a lightweight material which is physically strong enough to withstand virtually any reasonably encountered abuse and which is resistant to degradation when exposed to ambient influences such as a common carbonate-linked polymer produced by reacting bisphenol A and phosgene it is considered desirable to physically secure it in place by an appropriate fastening means. In the structure **10** such fastening means comprise bolts **62** and conventional elastomeric washers **64** extending in between the flange **54** and the groove **34.** Such fastening means may of course be used with a cast iron or similar screen or grid **52.**

It is preferred to form the structure **10** so that the sections **22** and **24** are integral with one another so as to constitute a "body" and consist of an imporous, continuous, lower, self-supporting layer of ABS polymer material thermally bonded to an imporous, continuous upper surface layer of an acrylic polymer material which is resistant to degradation when exposed to ambient influences. The AVS material is highly desirable because of its well recognized desirable physical characteristics including its comparatively light weight. When it is used as a layer **66** the body indicated is capable of withstanding significant abuse during handling, shipment and installation.

The acrylic layer **68** is desirable for use in connection with the layer **66** since it adequately protects the ABS material in the layer **66** against normal ambient influences which might tend to lessen the effective life of the ABS material. When the two layers **66** and **68** are hot or thermally bonded the polymer materials in these two layers are considered to intermingle to a degree so that there is no danger of the two layers becoming delaminated as they are used.

This is quite important from a practical standpoint in enabling the structure **10** to be used over a prolonged period. Also, this is quite important in that it enables the entire body consisting of the sections **22** and **24** to be inexpensively formed out of a sheet of laminated material as indicated by conventional vacuum forming techniques. The ABS material is also desirable for use as described in the fitting **46** because it can be conveniently secured to conventional ABS pipe by plumbers utilizing conventional techniques.

If desired the structure **10** may be constructed so as to include what may be referred to as an overflow structure or means **70.** This overflow structure **70** is located on the peripheral section **22** adjacent to and at one side of the central section **24** so as to be spaced from the periphery **72** of the peripheral section **22.** This overflow means **70** consists of an upstanding hollow boss **74** which extends from the top **30.** This boss **74** includes a top opening **76** and internal step shoulders **78** which are adapted to be secured to the exteriors of pipe of different sizes such as the pipe **80** shown through the use of a conventional adhesive. If desired a conventional cup shaped screen or grid **82** may be press fitting or otherwise secured around the exterior of the overflow structure **70.**

It is believed that the utility of the complete structure **10** will be obvious from the preceding. After this structure is secured in place on a roof structure **14** as indicated the tar **18** used on the roof **12** will be extended over the periphery **72** of the peripheral section **22.** The material used in the layers **66** and **68** will bond well to the normal hot tar used so as to preclude the possibility of leakage around the structure **10.**

I claim:

1. A scupper drain structure which comprises:

a body of a laminated material having a peripheral section and an integral central section which is completely surrounded by said peripheral section,

said peripheral section having a top and bottom and being nearly flat and sloping downwardly from its periphery towards said central section,

said central section having a top and a bottom and having a generally funnel like shape, said central section extending beneath said bottom of said peripheral section,

said central section including a peripheral, internal groove extending completely around the interior of said central section located at the top thereof immediately below the adjacent, surrounding surface of said top of said peripheral section,

said central section also including a bottom discharge opening,

said body and said central section consisting of an imporous, continuous, lower, self-supporting layer of ABS polymer material and an imporous, continuous upper surface layer of an acrylic polymer material, said surface layer being thermally bonded to said lower layer,

fitting means for securing the bottom of said central section to a pipe located on the exterior of the bottom of said central section so that such a pipe may be attached to said central section in communication with said discharge opening,

said fitting means including at least two stepped shoulders of different outer diameters corresponding to the internal diameters of different standard pipes,

a self-supporting screen means having a peripheral mounting flange and a central foraminous structure completely surrounded by said mounting flange and extending upwardly from the top of said mounting flange,

said screen means being located with said mounting flange fitting within said groove so as to support said screen means on said body,

said screen means including an imperforate guard wall extending around said foraminous structure adjacent to said flange, said guard wall serving to prevent roof debris from entering said central section of said body,

said mounting flange being no thicker than the depth of said groove beneath said surface of said top of said peripheral section adjacent to said screen means on said body with said mounting flange within said groove, said fastening means extending between said body and said screen means,

overflow means located on said peripheral section adjacent to said central section, said overflow means internally spaced from the periphery of said peripheral section,

said overflow means consisting of an upstanding hollow boss having an open top extending upwardly from said top of said peripheral section, said boss having internal stepped shoulders of different internal diameters corresponding to the outer diameters of different standard pipes.

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